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University of Kentucky

**STRAWBERRIES AND FARM PROFITS IN
WESTERN KENTUCKY**

BULLETIN NO. 255



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BULLETIN NO. 255

Strawberries and Farm Profits in Western Kentucky

By J. B. HUTSON*

INTRODUCTION

From April, 1919, to April, 1924, the Kentucky Agricultural Experiment Station and the Bureau of Agricultural Economics of the U. S. Department of Agriculture maintained a detailed cost route in Christian county, Kentucky. The data obtained included figures showing the relative possibilities of the different enterprises found in the farming systems in the area. In addition to these data, in the summers of 1923 and 1924, data were obtained from sixty other farms growing strawberries in Christian county, as to labor and material requirements for strawberries for the three-year crop period.

Christian county lies slightly southwest of the center of the Dark Tobacco District. The soil and type of farming in the southern part of Christian county are fairly representative of the soils and types of farming in the more fertile areas of the Dark Tobacco District, while the soil and types of farming in northern Christian County are fairly representative of the soils and types of farming in many of the less fertile areas of the district.

There are many other areas along transportation lines in western Kentucky as well suited for the growing of strawberries as are the areas studied in Christian county. The conclusions

*Acknowledgment is due Thomas Baird for valuable services rendered in collecting and tabulating the data, and to the Graphic Section, Bureau of Agricultural Economics, U. S. Department of Agriculture, for making the graphs for this bulletin. Acknowledgment is also due O. B. Jesness, Kentucky Agricultural Experiment Station, for suggestions regarding the discussion on the relation of the strawberry industry in Kentucky to the industry in the United States and for data upon the development of the strawberry industry in Kentucky.

reached regarding the relative possibilities of strawberries and other crops in Christian county should be applicable to these other areas suited for strawberry production.

DEVELOPMENT OF THE INDUSTRY IN KENTUCKY

In the spring of 1907 about a dozen growers in Warren county, in the vicinity of Bowling Green, most of whom had been growing strawberries on a small scale for the local market, decided to plant a larger acreage and ship in carlots. About sixty acres were planted in 1907. Carlot shipments were started in 1908. Since that time the industry has grown around Bowling Green until during good seasons more than 300 cars are shipped.

In 1915 the growers in McCracken county, around Paducah, began to ship in carlots. By 1924 this area was shipping more than one hundred cars a season. In 1916 carlot shipments started from Pembroke, Christian county. By 1924 Pembroke was shipping more than one hundred cars a season. Hopkinsville, Christian county; Franklin, Simpson county; Elkton, Todd county; Oakland, Warren county, and Russellville, Logan county, started carlot shipments in 1920, 1921 and 1922.

These counties are in the area commonly known as the Dark Tobacco District of western Kentucky. The total shipments of strawberries from this area for the years from 1921 to 1924 were from 400 to 800 cars each year, with annual receipts from one-half to one million dollars.

The strawberry industry in western Kentucky is developed around shipping points on the Illinois Central and Louisville and Nashville Railroads. The Illinois Central Railroad provides both express and freight service and the Louisville and Nashville Railroad, freight service only. In refrigerator cars, by freight, strawberries may be shipped to St. Louis, Chicago, Detroit, Cleveland, Pittsburg and intermediate points. Refrigerator cars, by express, may be shipped to Kansas City, Omaha, St. Paul, Montreal, Boston and intermediate points. Detroit, Pittsburg, Chicago and Cleveland are the largest markets for Kentucky strawberries.

In most cases express cars of berries are sold slightly higher at the shipping point than are freight cars. The advantages offered by reason of the larger area available for shipments usually more than offset the higher transportation charges on express stock.

In western Kentucky strawberries for carlot shipments are marketed thru cooperative associations.* There is one or more of these associations at each point from which strawberries are shipped.

With a cooperative association it is necessary that the acreage shall be sufficient to load at least one car daily during the harvesting season. This requires from 100 to 125 acres as minimum. An area with 150 to 500 acres within a radius of five or six miles of the shipping point is a desirable unit in strawberry production.

RELATION OF THE STRAWBERRY INDUSTRY IN KENTUCKY TO THE INDUSTRY IN THE UNITED STATES

Strawberries can be grown in limited quantities practically anywhere in the United States. The principal commercial areas, however, are located in the southeastern section of the United States, south of the north boundary lines of Kentucky and Missouri, and east of the west boundary of Missouri. Tennessee, Arkansas, Louisiana, Maryland, Missouri, North Carolina, Delaware, Virginia, Kentucky, Michigan, California, New Jersey, Florida, Illinois and Oregon, ranked in the order named as commercial shipping states in 1924.

The total weekly carlot shipments in 1923 for Kentucky and the states competing with Kentucky are shown in Fig. 2. Arkansas, Missouri and Tennessee in the west and Virginia, Maryland and Delaware in the east ship strawberries at the same time that Kentucky strawberries are on the market. The eastern states compete chiefly with our express stock and the western states with our freight stock. The shipments from Arkansas, Tennessee and Virginia usually begin to decline before shipments start from Kentucky so that Kentucky berries are on

*For further details regarding marketing strawberries, see Kentucky Agricultural Experiment Station Bulletin No. 246.

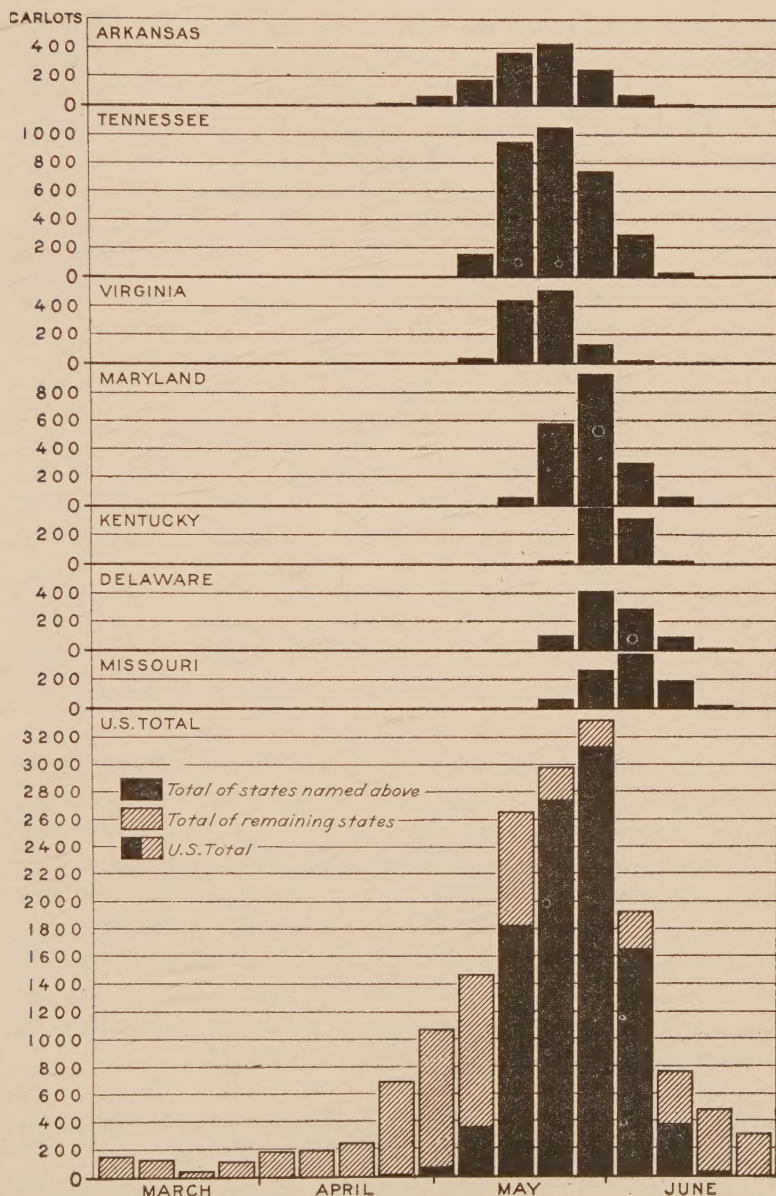


Fig. 2.—Carlot Shipments of Strawberries from Kentucky, Competing States and the United States, for 1923, by Weeks.

the market at the same time with only a part of the berries from these states. Considering all the shipments of berries, Kentucky for the past few years has been producing from 10% to 15% of the berries on the markets to which Kentucky has access during the harvesting season in Kentucky.

The relation of the total carlot shipments for Kentucky

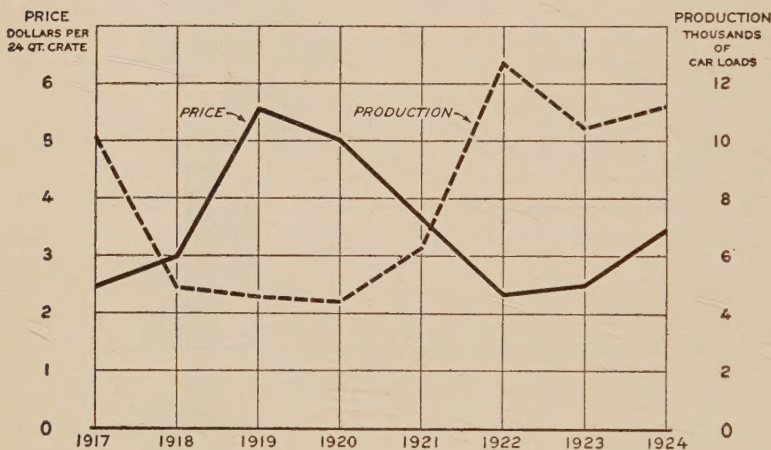


Fig. 3.—Relation of Strawberry Prices to Strawberry Production from 1917 to 1924.

and competing states to the prices received by Kentucky growers is shown in Fig. 3. These data indicate that the strawberry market is quite sensitive, responding with low prices when the production is high and high prices when the production is low. However, reasonable increases in the production in Kentucky alone should not materially affect the prices for Kentucky growers since Kentucky produces only a small part of the berries on the markets to which Kentucky growers have access. *Kentucky growers in planning for strawberries should keep informed as to what growers in competing states are doing.*

MAN LABOR AND HORSE WORK NECESSARY IN PLANTING AND CULTIVATING STRAWBERRIES

In western Kentucky strawberries usually are planted in the early spring and left for three harvesting seasons. They are

TABLE I.—Man Labor and Horse Work Necessary in Planting and Cultivating Strawberries.*
(Acre Basis)

Operations	Usual Dates	Equipment	Hours of Work		Acres in 10-Hour Day
			Man	Horse	
1st year:					
Plowing	March 1-April 15	2-horse walking plow or 3-horse walking plow	5. 3.6	10. 10.7	2. 2.8
Disking	March 1-April 15	6-ft. disk and 3-horse or 8-ft. disk and 4-horse	1.7 1.2	5.0 5.0	6.0 8.0
Harrowing	March 1-April 15	12-ft. harrow and 4 horses or 9-ft. harrow and 3 horses	.4 .6	1.6 1.7	24.0 18.0
Marking off	March 1-April 15	Corn planter	.6	1.2	16.0
Marking off	March 1-April 15	Garden plow	1.2	.....	8.0
Planting	March 1-April 15	By hand	20.0	.....	.5
Plow and harrow	April 1-Aug. 31	1-horse plow or harrow (8 times over)	20.0	20.0	4.0
Hoing	April 1-Aug. 31	Hand hoe (3 times over)	60.0	.....	.5
Fertilizing	June 1-July 15	1-horse drill	3.3	3.3	3.0
Mulching	Feb. 1-March 31	2 men and 2 horses	10.0	10.0	2.0
2nd year:					
Plow and harrow	June 15-Aug. 31	1-horse plow or harrow (4 times over)	10.0	10.0	4.0
Hoing	July 1-July 20	Hand hoe (2 times over)	40.0	.....	.5
Mulching	Feb. 1-March 31	As first year	10.0	10.0	2.0
3rd year:					
Plow and harrow	July 1-July 20	As second year	10.0	10.0	4.0
Hoing	July 1-July 20	As second year (1 time over)	20.0	.....	.5
Mulching	Feb. 1-March 31	As first year	10.0	10.0	2.0

*The man labor and horse work suggested will provide for more thorough cultivation than strawberries usually receive. With such cultivation strawberries should yield from 80 to 150 crates per acre annually.

cultivated with the plow and hoe from the time planted until late in the growing season of the first year. Strawberries are harvested in late May and early June. The second and third years, after the first and second crops are harvested, they are cultivated until late in the growing season.*

Standard needs for planting and cultivating strawberries are shown in Table I. The needs suggested here are not the amounts of labor used or the operations performed on any farm or the averages for any group of farms. They are intended rather as suggested standards of attainment in performing the operations necessary in planting and cultivating strawberries.

Possibly not many farmers perform these operations in the exact order listed. Many farmers substitute other operations for some of these suggested here. Possibly many of the most efficient farmers are not able to perform some of the operations within the time suggested because of a small acreage. Yet on the whole it is believed that most growers will be able to get good yields of berries by performing the operations and approximating the standards suggested.

DIRECT EXPENSES NECESSARY IN PLANTING AND CULTIVATING STRAWBERRIES

The direct expenses necessary in planting and cultivating strawberries are shown in Table II. Four hundred pounds of fertilizer per acre are suggested. Many successful growers in

*Within the last few years many successful growers in western Kentucky have adopted the practise of allowing an area to remain in berries for only two harvesting seasons. This enables them to market larger berries. Where the soil tends to become infested easily with insect and weed pests such a practise is desirable. However, on most soils, with thoro cultivation, good yields may be secured from the third crop.

During the last few years some growers in attempting to clean the weeds from the berry row with a minimum of labor have developed a method of cultivation for the second and third years that keeps the row clean without requiring labor with the hoe. After the berries have been harvested the first year they use a two-horse turning plow to throw the soil on the row from the two sides. This ridge is left from ten to twelve days and then the land is harrowed level. This leaves the entire area practically clean from weeds and since the root system of the strawberry plant is hardier than the root system of most weeds a careful timing of the removal of this ridge permits the killing of the weeds, leaving the strawberry plants alive and ready to grow.

This system permits the strawberry plants to make considerable growth before weed seeds can sprout and begin to grow; hence, very little cultivation is required to keep the strawberry plants practically free from weeds until well along in the fall. If this method of cultivation is used care should be exercised that the soil not remain on the row too long because the strawberry plant will not survive longer than from ten to twelve days when well covered with soil.

western Kentucky do not find it advisable to use fertilizer for strawberries. On the other hand, many successful growers are convinced that in most cases from 200 to 400 pounds of a fertilizer give returns that more than pay for the cost of the fertilizer and its application. Acid phosphate is the most common fertilizer used. In some cases from 40 to 50 pounds of nitrate of soda used with the acid phosphate have given good results. The decision with reference to fertilizer should be made after considering the soil and the condition of the young crop at the time the fertilizer would be applied, together with the probable price of strawberries at harvest time.

TABLE II.—Direct Expenses Necessary in Planting and Cultivating Strawberries.

(Acre Basis)		Cost
Item		
1st year:		
Plants, 4,500 @ \$3.50*	.....	\$15.75
Fertilizer, 400 lbs. @ \$1.50	.....	6.00
Straw for muching, 1 ton @ \$9.00	.....	9.00
Total 1st year	.....	\$30.75
2nd year:		
Straw for mulching, $\frac{3}{4}$ ton @ \$9.00	.....	\$6.75
3rd year:		
Straw for mulching, $\frac{1}{2}$ ton @ \$9.00	.....	\$4.50

Many efficient strawberry growers find it advisable to set the plants so that less than 4,500 per acre will be needed. Thirty-six hundred will plant an acre by setting the plants 3 feet and 6 inches each way, and 4,200 will plant an acre by setting the plants 3 feet one way and 3 feet 6 inches the other. Allowing for waste, 4,500 plants should be ample for an acre, since 3 feet by 3 feet 6 inches is as close as the plants may be set and cultivated easily.

*Good strawberry plants usually can be bought in large quantities at from \$3.00 to \$4.00 per thousand delivered to the grower. In some areas in western Kentucky they can be bought in the field ready for digging at from \$1.50 to \$2.50 per thousand.

RELATIVE AMOUNTS OF MAN LABOR, HORSE WORK AND OTHER ITEMS USED IN PLANTING AND CULTIVATING STRAWBERRIES AND RELATIVE YIELDS BY YEARS

Fig. 4 shows the average of the amounts of man labor, horse work and other expense items used in planting and cultivating

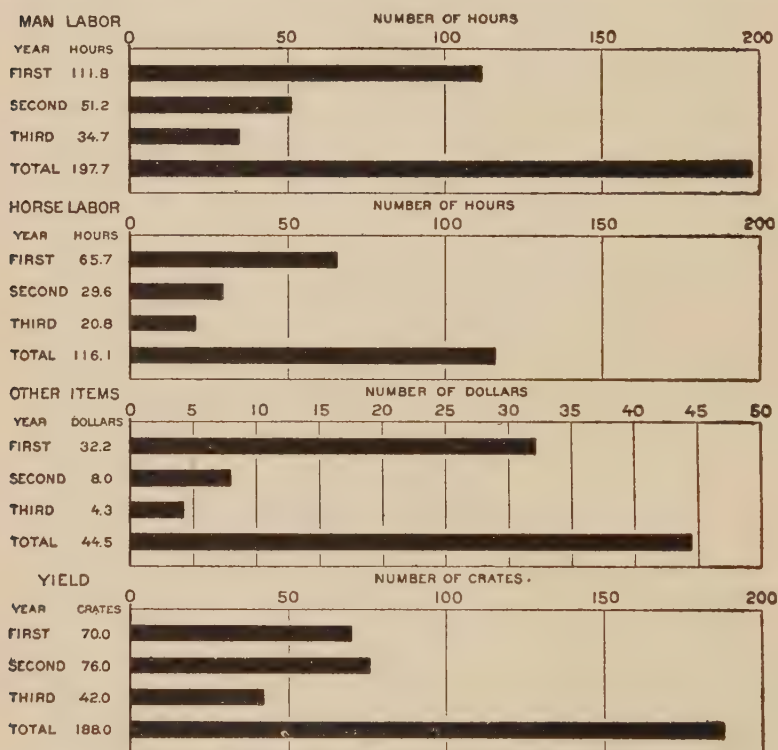


Fig. 4.—Relative Amount of Man Labor, Horse Work and Other Items Used in Planting and Cultivating Strawberries and Relative Yields by Years.

strawberries and the yields secured, by years, for 63 farmers in western Kentucky, from 1921 to 1924.*

The greater needs come during the first year strawberries are planted and the larger returns usually during the second harvesting season. The cultivation needs of strawberries are

*These data are from 36 crops in 1921-22-23 and 27 crops in 1922-23-24.

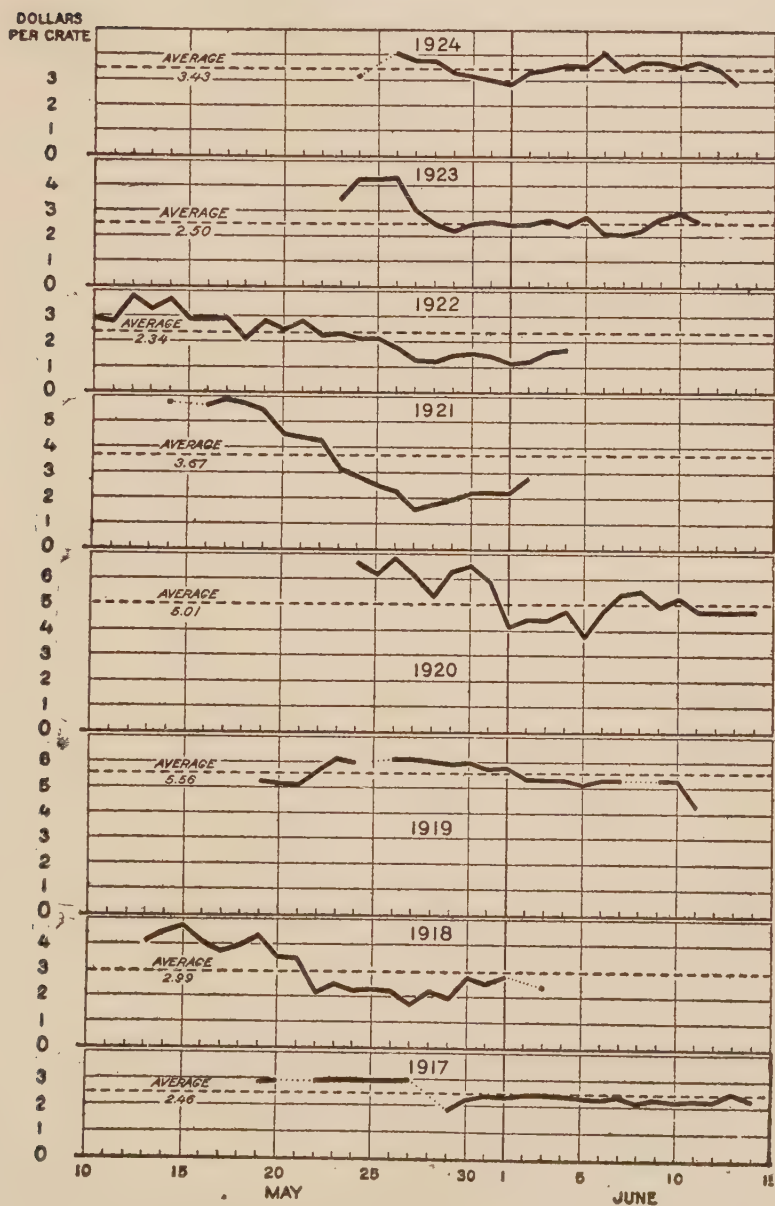


Fig. 5.—Grower's Prices of Strawberries by Days from 1917-1924.

small for the second and third years. It is obvious that the farmer in planning for strawberries must consider the total needs and returns for the full crop period.

MAN LABOR, HORSE WORK AND OTHER EXPENSES NECESSARY IN HARVESTING STRAWBERRIES

The harvesting season for aroma strawberries in western Kentucky usually begins from May 10 to 25 and continues from 15 to 25 days ending from June 5 to 10. The dates of the beginning and ending of carlot shipments for Kentucky's largest cooperative association from 1917 to 1924 are shown in Fig. 5.

The expenses incident to harvesting strawberries are much larger than the expenses of planting and cultivating. Standard needs in harvesting strawberries are shown in Table III.

TABLE III.—Standard Needs in Harvesting Strawberries with Yield of 80 Crates Per Acre.
(Acre Basis)

Operations	Usual Dates	Crew	Estimated Cost
Contract:			
Picking, 80 crates @ 80c	May 10-20 to June 5-15	3 to 6 pickers* per acre	\$64.00
Grading and crating, 80 crates @ 20c	May 10-20 to June 5-15	1 grader for 10 pickers	16.00
Crates, 80 @ 35c	May 10-20 to June 5-15		28.00
Regular:			
Supervision			
Hauling to market	May 10-20 to June 5-15	1 supervisor for 20 pickers and 2 graders	
(1 man and 1-horse wagon)	May 10-20 to June 5-15	1 man and 1 horse for 5 to 10 acres	

*This is on the basis of mature men or women pickers. If children are used a larger number of pickers per acre will be necessary.

The larger part of the work in harvesting usually is done on the contract basis. All growers in one association and often all in nearby associations pay the same contract rates for the work in harvesting. For the past few years most growers in

western Kentucky have been paying $2\frac{1}{2}$ cents per quart, or 60 cents per crate, with 18 cents per crate bonus if the worker continues thruout the season, for picking, and from 15 to 25 cents per crate for grading and crating. Where the grading is done in the field by the pickers the picking cost may be expected to be slightly more and the grading and crating cost slightly less than the costs suggested here.

In most cases the small grower can get sufficient competent help locally to care for the strawberries. The large growers often import laborers for the harvesting season. Where laborers are imported food and lodging must be provided on the farm.

Crates usually are secured in carlots by the cooperative association in the early spring and distributed to the individual growers at the car door. For the past three years 24-qt. collapsible crates have cost the growers from 30 to 35 cents each.

VARIATIONS IN THE COST OF HARVESTING STRAWBERRIES FROM YEAR TO YEAR

The average cost of harvesting strawberries for the different years on the farms in this study is shown in Fig. 6. Since the larger part of the work in harvesting strawberries is done by contract and the contract price for the different operations is fairly uniform, the harvesting costs per crate do not vary widely from year to year. For these same reasons the harvesting costs per crate do not vary widely from farm to farm. Good methods in harvesting strawberries are reflected largely in the yields and discussed under "Profitable and Unprofitable Practises."

The higher harvesting cost in 1921 was due largely to the higher cost of crates for that season. The other yearly variations were in supervision and crating and grading. Many growers from whom these data were obtained were practically without experience in harvesting strawberries in 1921. As they acquired more experience they were able to reduce the suprvision, crating and grading costs slightly. Because of the small

yearly variations in these costs growers should be able to anticipate the harvesting costs with reasonable accuracy.

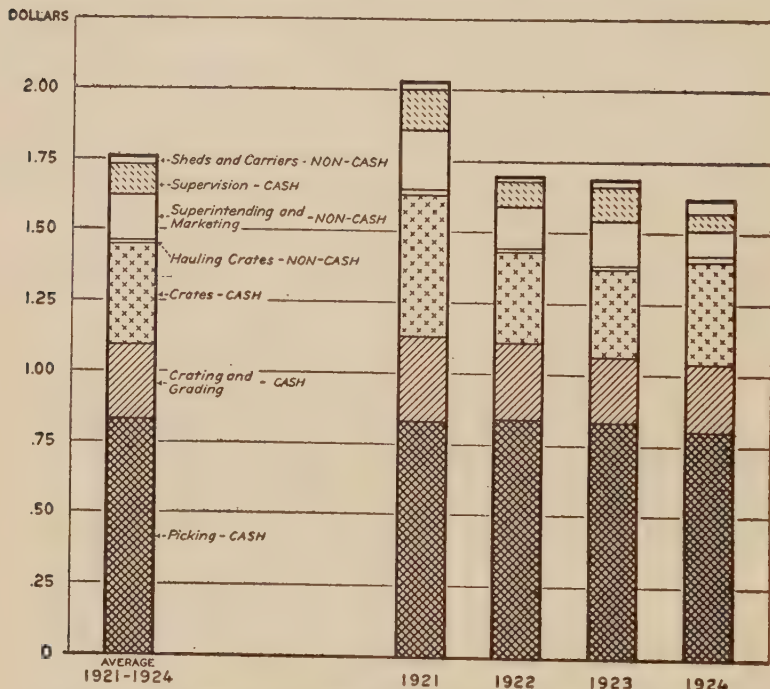


Fig. 6.—Variations in the Cost of Harvesting Strawberries from Year to Year.

PROFITABLE AND UNPROFITABLE PRACTISES IN GROWING STRAWBERRIES

Costs vary widely in growing strawberries as in most other lines of production. Often the difference in the planting and cultivating costs alone are large enough to determine profits or losses.

In planting and cultivating strawberries the labor used per acre by the different growers is perhaps the greatest variable. Some farmers devote twice as much labor to cultivating an acre of strawberries as others. Some secure yields more than twice as large as others. While those using the largest amount of labor do not always get the largest yields, yet, as a rule, those

who cultivate most thoroly get the largest yields. A careful analysis of the data available suggests that most growers could increase their profits from strawberries by giving the growing crop more careful attention.

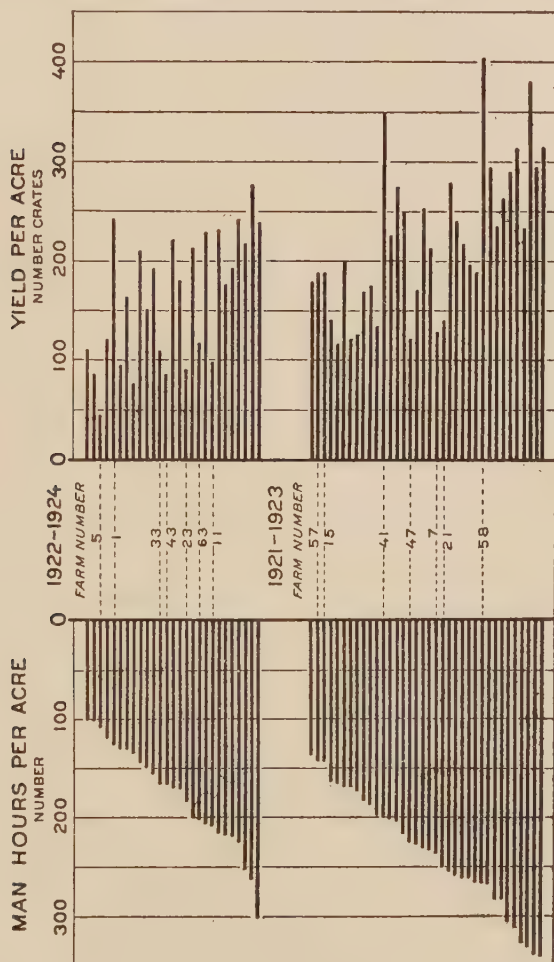


Fig. 7.—Relation of Labor Used in Cultivation to Yield.*

*The bars at the left represent the hours of man labor used per acre for the three years by the different growers in planting and cultivating strawberries; the bars opposite at the right represent the yields obtained. The farms are divided into two groups because of the different crop periods and the farms in each group are arranged in the order of the man labor used per acre, beginning with the lowest. Some of the reasons for

Intensive vs. Extensive Cultivation. The relation of the labor used in cultivating strawberries to the yields obtained is shown in Fig 7. Generally stated, one hour of man labor with the horse work and other items used along with it seems to result in about one crate of strawberries ready for harvesting. That is, increase in labor used in cultivation seems to result in proportionate increases in production. Since the other expense items per hour of man labor generally decrease as man labor per acre increases it appears that many farmers could increase their output per unit of input by more thoro cultivation during the plant growing seasons.

Fig. 7 also shows that some farmers got almost two crates of strawberries for each hour spent in cultivation, while others devoted almost two hours for each crate. The difference is due, to a great extent, to efficient and inefficient practises. The growers who used only a small amount of labor in proportion to the yield received gave the crop attention of the kind needed at the time needed. In most cases they had only a small acreage

the exceptionally high and exceptionally low yields are suggested in the following statements:

Farm No. 5.—**Small amount of labor used and unusually low yield.** Only two crops harvested. Planted late and poor stand resulted. Damaged considerably by live stock and freezes the second year.

Farm No. 1.—**Small amount of labor used and unusually high yield.** Only two crops were harvested from this area. These crops were unusually large. The plants were set out early the first year and a good stand was secured. Well cultivated during the first season at the times needed and an unusually large crop harvested. The area was cultivated fairly well after the first crop was harvested and a good yield secured the second year.

Farm No. 33.—**About an average amount of labor used and low yield.** First crop of berries grown on this farm. Planted after hay crop and an unusually large amount of labor with hoe required. The third crop injured considerably by frost.

Farm No. 43.—**About an average amount of labor used and low yield.** This crop was planted on sod land and a large amount of work required with the hoe the first year. Poorly cared for after the first and second crops were harvested. Second and third crops were practically failure. Some frost damage the first year.

Farm No. 23.—**About an average amount of labor used and low yield.** First crop of berries grown on this farm. Planted after corn and an unusually large amount of labor with the hoe required the first year. Not well cared for after the first and second crops harvested and yields for the second and third years unusually low.

Farm No. 63.—**A large amount of labor used and low yield.** A large amount of work required with hoe the first year. Not well cared for after the second crop was harvested. Considerable frost damage for all three years.

Farm No. 11.—**Large amount of labor used and unusually low yield.** Only two crops harvested. Planted after truck crops and large amount of work required with the hoe the first year. Well worked out after the first crop was harvested but the second crop suffered about an 80 per cent damage from frost.

Farm No. 67.—**An unusually small amount of labor used and good yield.** Planted after tobacco that had been well cultivated and very little work

of berries. A small amount of labor at the proper time directed wisely often accomplishes more than a larger amount of labor at some later time.

Often the difference in the yields obtained by growers is due to the inability of some to harvest the berries as they ripen. In harvesting, the berries are picked as they ripen or allowed to become overripe and lost. In some cases growers do not make the necessary arrangements for harvesting labor before the berries begin to ripen. Often the berries are injured unnecessarily in picking. With a plentiful supply of labor, arrangements must be made for careful supervision.

A Large Acreage vs. a Small Acreage. Because of difficulties in harvesting it does not seem possible to make a large acreage of strawberries profitable under Kentucky conditions. Rain usually falls on from one-fourth to one-half of the days during the harvesting season. When a grower plans employment for the harvesting force for the full day and rain interferes for one-half the day he must increase his force by about 50 per cent the fol-

required with hoe the first year. Well cared for after the first crop was harvested. Large yield the second year. Mowed after the second crop was harvested. Fair yield the third year.

Farm No. 15.—**An unusually small amount of labor used and good yields.** Small acreage. Planted after tobacco that had been well cultivated and very little work required with the hoe the first year. Fertilized fairly heavily. Well worked out after the first and second crops were harvested and good yields for all three years.

Farm No. 41.—**Small amount of labor used and unusually high yield.** Small acreage. Fertilized heavily. Cultivated at the times needed with the plow and little work required with the hoe. Well worked out after the first and second crops were harvested. Good yields for all three years.

Farm No. 47.—**About an average amount of labor used and unusually low yield.** Planted after corn and allowed to get unusually grassy the first year. Necessary to throw the soil away from the plants both ways. Large amount of work with hoe necessary. Worked out only fairly well after the first crop was harvested and not worked out after the second crop was harvested. Only fair yields for each of the three years. The first and third crops injured considerably by frost.

Farm No. 7.—**About an average amount of labor used and unusually low yields.** Planted after corn and stable manure used. An unusually large amount of labor required the first year. Worked out only fairly well after the first and second crops harvested. Yields very light the second and third years.

Farm No. 21.—**About an average amount of labor used and unusually low yield.** Well cared for the first year and a fair yield. Not worked out until late in the season after the first and second crops harvested and a large amount of labor was put in with the hoe. Plants did not have time to make good growths the second and third years and very poor yields.

Farm No. 58.—**Slightly more than average amount of labor used and unusually large yield.** Small acreage in strawberries and small acreage in other crops. Cultivated unusually well. Attention was given when needed and only a moderate amount of labor required. The hoe was not used in this area the third year but the weeds were well cleaned out with the plow. All the berries saved in harvesting. Good yields for each of the three years.

lowing day. Should rain interfere the following day, he will need a still further increase in force. Since the larger grower usually imports a large part of the harvesting labor he can not make these increases. The small grower can increase his force more easily since a few laborers mean a greater proportionate increase. And it is these berries saved during emergencies that are often responsible for the profits. **Ofttimes with a fairly uniform price we find the grower with a large acreage suffering considerable losses while the grower with a smaller acreage is making profits.**

Successful vs. Unsuccessful Growers. The labor used by two of the most successful and one of the least successful strawberry growers, and other expense items, with the yields secured, are shown in Table IV. One of the successful growers had only two acres and the other three acres. Both of them prepared the land well and set out the plants early enough in the spring to insure a good stand. The plants were set about 3 feet apart in the rows so that the large part of the cultivation could be done with the plow. These growers with only a small acreage were able to give the crop attention when needed during the cultivating season. Consequently the crops were well cared for with a minimum amount of labor.

One of these growers used a small amount of fertilizer. The land of the other grower was heavily fertilized for the previous crop and it was thot that no further fertilization was necessary.

In both cases the crops were well worked out shortly after the first and second crops were harvested. This cultivating was continued until late in the growing seasons. Good yields were obtained during the first, second and third harvesting seasons.

The unsuccessful grower planted five acres of strawberries at about the same time his neighbors planted two and three acres. He set out the plants 2 feet and 6 inches apart in the row. This crop could not be cultivated easily crosswise with the plow and more work with the hoe was necessary. Consequently, by putting in about the same time per acre as his neighbors he was

not able to care for his berries as well. Yet he appeared to have fair prospects for a crop the first year.

TABLE IV.—Showing the Man Labor, Horse Work and Other Expense Items Used in Planting and Cultivation, and Yields Secured by Successful and Unsuccessful Strawberry Growers

	Success- ful Grower No. 1	Success- ful Grower No. 2	Unsuc- cessful Grower
Acres in strawberries	2	3	5
Man labor, hours per acre:			
1st year	148	96	107
2nd year	78	72	21
3rd year	41	69	41
Horse work hours per acre:			
1st year	40	58	53
2nd year	18	35	22
3rd year	30	32	22
Plant cost per acre	\$17.50	\$18.00	\$22.50
Fertilizer—cost per acre .....		.90	
Mulching material (cost three years)	30.00	25.00	23.00
Use of equipment (estimated)	3.46	5.00	4.08
Planting and cultivating (cost per acre for three years)*	114.92	111.30	95.02
Yields per acre in crates:			
1st year	148	93	40
2nd year	152	102	51
3rd year	104	85	30
Total for three years	404	280	121
Planting and cultivating—cost per crate...	\$0.28	\$0.40	\$0.78
Use of land per crate** .....	.13	.06	.13
Cost per crate to harvesting .....	.41	.46	.91

*These costs were obtained by charging man labor at 20 cents per hour and horse work at 12 cents per hour, allowing a reasonable charge for the use of equipment and adding these charges to the cash expenses in planting and cultivating. Financial statements in which uniform rates are applied to the man labor and horse work do not show all the disadvantages of a large acreage of one crop. A relatively large acreage of one crop results in high labor needs at some seasons and low labor needs at other seasons. This uneven distribution of the labor needs makes for higher labor costs. These higher labor costs are not reflected where uniform labor rates are used. Consequently, statements of this kind tend to favor the farm with the relatively larger acreage of the crop being considered.

**The value of the use of the land was obtained by taking 7 per cent of the estimated market value of the land for four years, the assumption being that 7 per cent should take care of the annual interest, taxes and upkeep and that the land is used four years in harvesting the berries three seasons. In arriving at the cost per crate, this total cost was divided by the total number of crates sold during the three seasons.

This first crop was damaged considerably by frost. After the first crop was harvested, pressed by other work and discouraged because of the strawberry yield the first year, he did not work out his berries until July and then not thoroly. As a result he secured only a fair crop the second year. After the second crop was harvested the weeds were not cleaned out until late and only slightly better than the previous year, consequently the yield was small the third year.

According to the calculations in Table IV the planting and cultivating cost for the unsuccessful grower was about 90 cents per crate, whereas his more efficient neighbors were getting berries of the same quality ready for harvesting at from 40 to 50 cents per crate. The unsuccessful grower failed to give the growing crop attention when needed. Possibly the harvesting season was not carefully planned for. Undoubtedly he would have reduced his planting and cultivating cost considerably and increased his total net returns had he concentrated on two or three acres the same labor and attention that he devoted to the five acres.

THE INCOME FROM STRAWBERRIES

The variations in the receipts from strawberries on the different farms are shown in Table V.* For the 1921-22-23 crops, the most of the growers received from \$500 to \$1,000 per acre for the three years. However several received less than \$500 per acre for the three years and several more than \$1,000 per acre. For the 1922-23-24 crops, most of the growers received from \$300 to \$700 per acre. Yet several received less than \$300 per acre for the three years and a few more than \$700 per acre.

The variations between the 1921-22-23 crops and 1922-23-24 crops are due to differences in both yields and prices. In 1922 strawberry yields were unusually high and prices unusually low in Kentucky. Good yields and only fair prices were re-

*The prices used in Table V are slightly higher than those shown in Fig. 4, since many of the growers from whom production data and actual receipts were obtained had express transportation facilities. The association furnishing the data for Fig. 4, had only freight transportation facilities.

ceived in 1923. As a result the crops harvested in 1923 and 1924 had not received as much attention during the cultivating seasons as the immediately preceding crops. Both yields and prices were slightly higher in 1921 than in 1924.

TABLE V.—Showing the Range in the Per Acre Receipts from Strawberries on the Different Farms for the Three-Year Crop Period.

Receipts Per Acre in Dollars	1921-22-23 Crops		1922-23-24 Crops	
	Yield Per Acre in Crates	Number of Farms	Yield Per Acre in Crates	Number of Farms
101—200	-----		45	*
201—300	-----		94	* * * * *
301—400	123	* *	114	* * *
401—500	136	* * * * *	152	*
501—600	170	* * * * *	171	* * * * *
601—700	192	* * * * * *	221	* * * * *
701—800	232	* * *	237	* *
801—900	246	* * * * *	265	* *
901—1000	288	* * * * *	-----	
1001—1100	324	* * *	-----	
1101—1200	-----		-----	
1201—1300	380	*	-----	
1301—1400	404	*	-----	

The variations in receipts for different growers for the same years are due chiefly to differences in yields, since the prices are fairly uniform for any one season. The yields, in turn, are influenced largely by the methods used in cultivating and harvesting the crop, together with the farmers' ability to secure workers to handle the crop during the harvesting season.

Usually growers with a small acreage get larger returns per acre than growers with a larger acreage. Often the total net returns after deducting cash expenses are larger for the grower with a small acreage than for the grower with a large acreage. As stated above the demands during the harvesting season are usually such that it is very difficult to make a large acreage of strawberries profitable.

The strawberry crop has excellent possibilities in many areas in western Kentucky if undertaken on a small scale. There must be adequate transportation facilities. There must

be co-operative effort. One grower cannot market his crop alone. The crop should be well cultivated. The harvesting season must be planned for. But these things when done wisely usually are rewarded.

HOW TO FIND A PLACE FOR STRAWBERRIES WITH OTHER CROPS

Data have been presented suggesting requirements for and returns from strawberries in western Kentucky. These data indicate that a small acreage of strawberries has usually given good returns for the land, labor, teams and other instruments of production used. These data may be made the basis for calculations and plans for individuals who can get land, labor and teams at reasonable rates at the times needed by strawberries. For others, it is hoped that they will stimulate a comparison of this crop and the crops that use labor at the same seasons as does the strawberry crop.

It is realized that most farmers do not think about crops singly but think of crop combinations. Usually the farmer plans to use a given farm acreage with practically the same teams and labor force thruout the year. That is, he has practically the same amount of man labor and horse work available each day in the year. A single crop provides work for the man and teams for only part of the year. It may require several crops to keep the men and teams busy and it is these crop combinations that the farmer must think about if he is to secure the largest profits for the year.

There are some farmers who can plan for one crop without considering other crops. If the farmer lives near a small town that has labor and teams that he can hire whenever he needs them, he can make plans for the strawberry crop without considering the other crops. Often individuals not fully employed in these town find it possible to make considerable contributions to their incomes by buying or renting a small area of land and planting and cultivating strawberries with their own time and that of men and teams hired especially for strawberries.

However, most farmers are further removed from this extra labor supply and usually do not find it convenient or possible to hire a great amount of extra day-to-day labor. In most cases they have several crops upon which they are depending for their profits. When one of them thinks of the strawberry crop, he thinks of it as related to other crops and the possibility of increasing the profits of his particular farm by adding strawberries.

HOW TO DETERMINE THE PROBABLE NET RETURNS FROM STRAWBERRIES

Before a farmer will be able to decide whether or not a strawberry crop will increase his farm profits, he will want to determine how well he is utilizing the land, man labor, horse work and other instruments of production with his present crops and live stock and the probable returns from these crops as compared with strawberries. If he finds that he has land available, teams and equipment that he is not using at the times that strawberries need attention and that his time or the time of his regular hired help is not being fully employed, or that he can secure extra hired help when needed by strawberries, his problem is comparatively simple. Under such conditions he can expect to increase his farm profits by the amount that the strawberry receipts exceed the direct cash expenses for strawberries.

For example, suppose the farmer finds that he can take care of one acre of strawberries planted each year, with his present land, teams, tools and labor force, at all seasons of the year except the strawberry harvesting season. By planting one acre of strawberries each year and leaving these for three harvesting seasons, he would have one acre to harvest the second year, two acres the third year, three acres the fourth year and thereafter. Then, to determine the probable increase in farm profits by adding strawberries to the crops already being grown, the farmer would add the probable strawberry harvesting cost to the other direct costs and deduct the total from the probable strawberry receipts. Table VI shows how this calculation may be made.

On the basis of the costs, yields and prices in Table VI the farmer with land unused who can handle an acre of strawberries with the same labor force, teams and tools with which he had been handling the other crops, could expect to increase his farm profits about \$118 a year. If he could handle two acres of strawberries in addition to the other crops he could expect to increase his farm profits by about \$236 per year. If he found that there was still more slack and could add three acres of strawberries with the present labor force, teams and tools, without decreasing his live stock or other crops, he could expect to increase his farm profits by \$354 a year. Or by planting one acre each year and allowing these to remain for three harvesting seasons he could expect to increase his farm profits about \$118 the first year after planting, about \$236 the second year, and about \$354 the third year and each year thereafter.

TABLE VI.—Method of Finding Probable Returns from Strawberries.

For farms with unused resources available for growing strawberries	
$\frac{1}{3}$ plant cost one acre (4,500 @ \$3.50)*	\$5.25
$\frac{1}{2}$ fertilizer cost (400 lbs. @ \$1.50)	2.00
Straw for mulching $\frac{3}{4}$ ton @ \$9.00	6.75
Crates—80 @ 35c	28.00
Picking—80 @ 80c	64.00
Grading—80 @ 20c	16.00
Probable expense (total items above)	122.00
Probable receipts, 80 crates @ \$3.00	240.00
Probable added income from strawberries:	
One acre (\$240.00 minus \$122.00)	118.00
Two acres (two times \$118.00)	236.00
Three acres (three times \$118.00)	354.00

This calculation is based upon prices slightly below and yields slightly above the average yields and prices in western Kentucky for the past few years. Careful cultivation would undoubtedly result in larger yields. It is recognized that both yields and prices vary widely from year to year, yet as a rule, unfavorable yields in an area result in more favorable prices and favorable yields in less favorable prices so that by taking into account the production trends in competing areas it is be-

*The strawberry crop usually is harvested three seasons from one planting. For this reason one-third of the probable plant cost and one-third of the probable fertilizer cost for the three years are used in this calculation for probable annual costs.

lieved the net returns may be approximated with some degree of accuracy.

It is the writer's observation that there are many farmers in western Kentucky in areas in which strawberries are being grown at present with marketing and transportation facilities at their disposal, who have the resources available to care for two, three or four acres of strawberries in addition to their present crops and live stock. In some cases it might mean a more careful planning of the work of the farm. In others it might mean slightly more work for the operator or some member of the family. But with increased farm profits the goal, it is believed that such extra work and planning will be justified.

REDUCING THE ACREAGE IN OTHER CROPS TO MAKE ROOM FOR STRAWBERRIES

There is a class of farmers in western Kentucky who are at present utilizing fairly completely the land, teams and labor force at their disposal. This class is growing all the crops that they can well take care of with their present labor force and teams. The problem of determining the possibilities of strawberries for this class of farmers is more difficult. When one of them adds strawberries, he will be compelled to reduce the crops that will release labor at the seasons that the strawberry crop needs attention. Before he can decide to do this it will be necessary that he consider the needs of and the returns from strawberries on the one hand and the crops that would be likely reduced on the other.

HOW TO DECIDE UPON THE CROPS TO REDUCE

In trying to make room for strawberries the farmer will turn to those crops that need attention at the same season as does the strawberry crop. The strawberry crop makes its heaviest demands upon the men and teams in the spring and early summer. In western Kentucky corn and tobacco are the other crops that need considerable attention during this period. The strawberry crop is planted in March and early April. It is cultivated in May, June, July and August the first year, and

July and August the second year. Late May and early June is the usual time for harvesting strawberries.

Corn requires labor for planting in April and May and cultivating in May and June. Tobacco requires labor for transplanting in May and June, cultivation in June and July, worming, suckering and spraying in July and August, and harvesting in September. The peak load or heaviest labor needs for tobacco come during the latter part of the worming and suckering season in late August and the harvest season in September. The acreage of tobacco to be handled with a given labor force usually is determined by the labor available for work on tobacco during late August and early September. In western Kentucky practically all the farm labor is used by tobacco during this season.

Tobacco also makes a heavy demand for labor during the transplanting season of May and June. This is also the season for planting and cultivating corn. The harvesting of small grain and hay also requires labor in June on farms in the better farming areas. Practically all these needs are fairly definitely fixed as to time so that the heavy labor demands on farms in western Kentucky usually come in May, June, late August and September.

Should a small acreage of strawberries be substituted for an equal acreage of corn, total labor needs on the farm would be increased during the strawberry harvesting season in late May and early June. On the other hand, should a small acreage of strawberries be substituted for an equal acreage of tobacco, the total labor needs on the farm would be increased during the strawberry harvesting season and decreased during the tobacco harvesting season of September. But the labor used by an acre of strawberries is considerably more than that used by an acre of corn and considerably less than that used by an acre of tobacco, more nearly approaching that used by an acre of corn than that used by an acre of tobacco. Considering this together with the fact that the returns from an acre of tobacco are usually considerably greater than the returns from an acre of corn, it appears desirable in substituting strawberries for corn and

tobacco to make larger reductions in the corn acreage than in the tobacco acreage.

It has been pointed out that the chances for larger yields per acre for strawberries are much greater with a small acreage than with a large acreage. Should the farmer be without previous experience in growing strawberries it would be desirable for this reason to plant only a small acreage in the beginning.

Possibly a good way to begin would be to plant from one to three acres of strawberries the first year. By following the plan of planting one acre of strawberries each year and permitting these to remain for the three harvesting seasons, by the third year after planting, three acres would be available for harvesting and three acres each year thereafter. Should the area not be utilized for other crops after the third crop of strawberries is harvested, four acres of land would be required for strawberries annually. However, in western Kentucky it is usually possible to get a good crop of cowpeas or a fair crop of corn after the third crop of strawberries is harvested.

In many cases it might be desirable to plant three or four acres of strawberries the first year and make no further plantings until the last year that this acreage was to be harvested. Such a practise would require more labor the first year during the strawberry planting season of early spring but slightly less during April and May of the second and third years. Possibly the final decision regarding the acreage of strawberries to plant a given year and the crops to be reduced would be influenced largely by the relative probable prices of strawberries and the crops being reduced on the one hand and the extent to which the labor available was being used by the present crops and the possibility of securing labor at a reasonable cost to help during the rush seasons on the other.

A DETAILED COMPARISON OF THE LABOR NEEDS OF "CORN AND TOBACCO" AND STRAWBERRIES

In attempting to test the soundness of the conclusions regarding the possibility of substituting a small acreage of straw-

berries for an equal acreage of corn and tobacco without materially changing the present labor program, more detailed comparisons will be made. In order to use approximately the same amount of labor that had been used on the farm before the

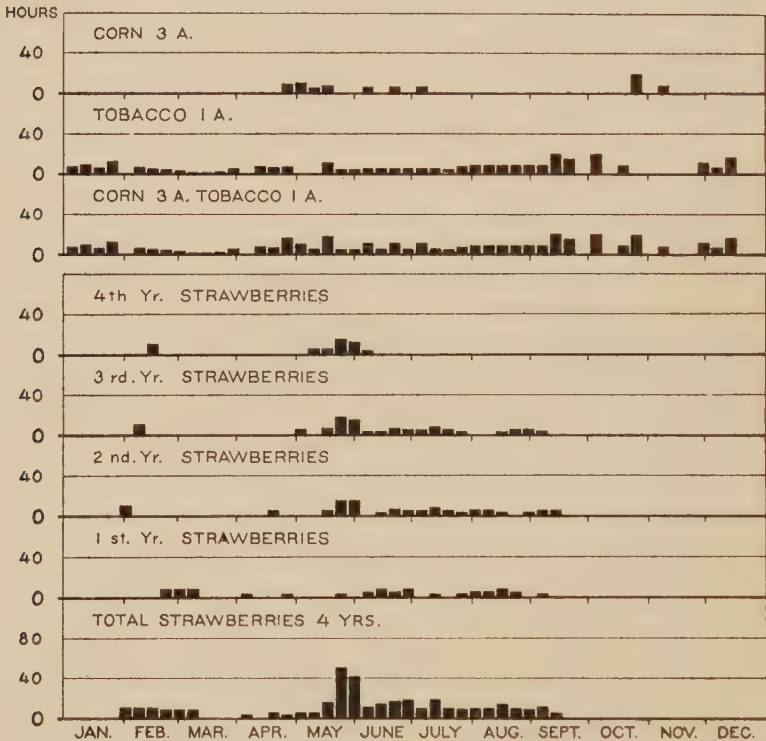


Fig. 8.—Labor Needs, by Weeks, by "One Acre of Tobacco and Three Acres of Corn for One Year" and "One Acre of Strawberries for the First, Second, Third and Fourth Years."*

strawberry crop was introduced, it will be assumed that the strawberries have displaced three acres of corn and one acre of tobacco. Fig. 8 shows the labor used, by weeks, by an acre of strawberries for the first, second, third and fourth years on a

*The total labor shown for strawberries will provide for and take care of three acres of berries thru the harvesting season. This includes all labor needed in cultivation, the regular farm labor needed in supervision and hauling to market, but does not include the contract labor needed in picking and grading the berries.

typical strawberry, corn and tobacco farm and the labor used by three acres of corn and one acre of tobacco on a typical corn and tobacco farm in 1923.

The labor needs for strawberries are great during the harvesting season of late May and early June. The labor needs for tobacco are great during the tobacco harvesting season of September. No labor is used by strawberries during October, November and December. This is not to be considered a serious difficulty since the plan being demonstrated merely reduces and does not eliminate tobacco from the farming system. A small reduction in the tobacco acreage should enable the farmer to complete stripping earlier, leaving more of the spring free for other miscellaneous work. It is to be remembered that strawberries require attention in the spring earlier than most crops, since the mulching is done usually in February and March and new areas usually are planted in March and April.

The total weekly distribution of labor for the typical corn and tobacco farm before and after the suggested substitution is shown in Fig. 9. Deducting the labor for three acres of corn and one acre of tobacco and adding the labor of four acres of strawberries as used on a neighboring farm, the labor needs are made considerably heavier for May and early June and slightly lighter for September. With such an anticipated condition confronting the farmer he would become concerned with the possibility of reducing the labor at the time of the heavy needs in the spring by doing some of this work during the other seasons of the year.

The total distribution of labor, by crops, on this corn and tobacco farm, with the labor for four acres of strawberries* substituted for the labor for three acres of corn and one acre of tobacco, is shown in Fig. 10. No great amount of shifting would have to be done after this substitution in order to provide for a distribution of labor as desirable as the distribution before.

On this farm there was considerable labor for maintenance in late May. Maintenance labor consists in repairing buildings

*This includes one acre each of first, second, third and fourth year berries or three acres of berries for harvesting. Berries are not harvested the first year.

and fences, filling washes, cleaning fence rows and repairing harness and tools and usually is not definitely fixed as to time; that is, it usually is done when the soil is too wet for field work or when none of the fixed work can be done. Had there been strawberries to harvest the farmer could have planned to do these miscellaneous jobs earlier in the spring, since wet soil does not interfere with strawberry harvesting.

Possibly some fall plowing for corn could be done, making the early spring work for corn lighter and permitting some of the work in preparation for tobacco to be moved forward slightly earlier in the season. It is not believed that there are many farms in western Kentucky utilizing the available labor so completely as not to permit such shifting of some of the early spring work.

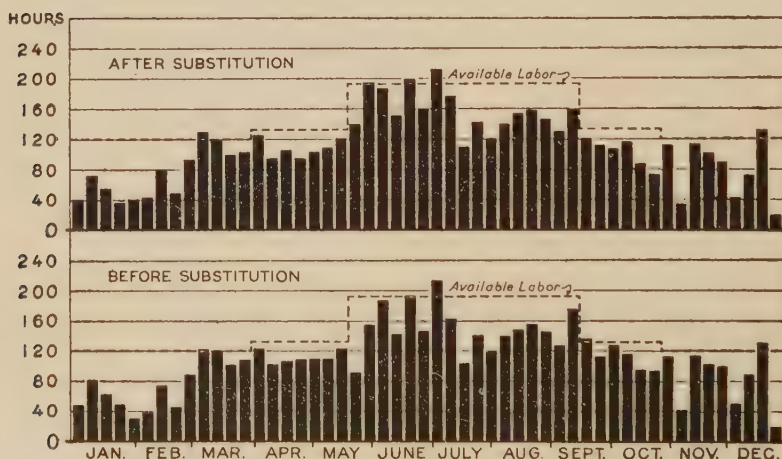


Fig. 9.—Total Weeks Labor Needs on a Farm Before and After Strawberries have been Substituted for 3 Acres of Corn and 1 Acre of Tobacco.

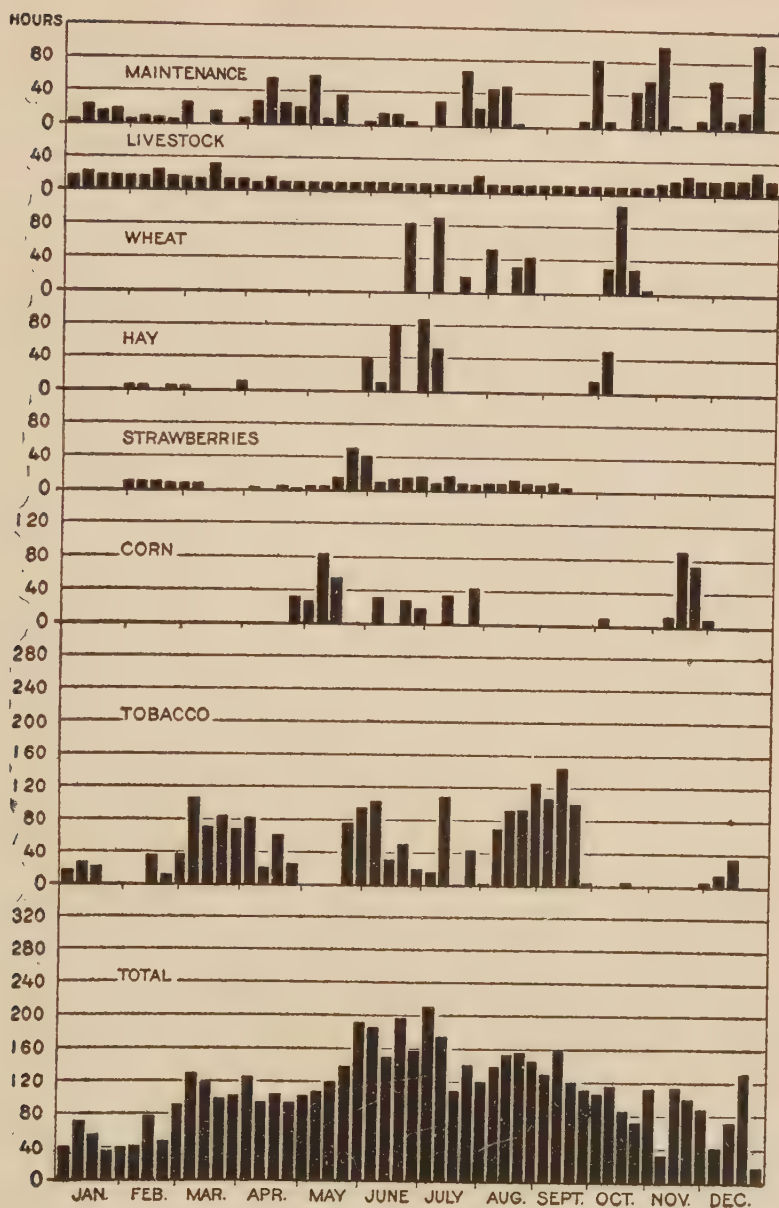


Fig. 10.—Total Weekly Labor Needs on a Farm Before and After Strawberries have been Substituted for 3 Acres of Corn and 1 Acre of Tobacco.

**TEAM WORK, EQUIPMENT, LAND AND MANAGERIAL ACTIVITY
USED BY STRAWBERRIES AND "CORN AND TOBACCO."**

Team Work. So far in this discussion nothing has been said about the horse work or teams required by strawberries. An acre of strawberries the first year needs almost as many days with the teams as does an acre of tobacco and considerably more than an acre of corn. However, strawberries use the work stock earlier in the spring and later in the summer than corn or tobacco. During the second and third years the strawberry crop uses only a small amount of team work before the cultivation season is over for corn and tobacco. Since, normally, the acreage of strawberries on a given farm is twice as great for second and third year berries as for first year berries, it is evident that any substitution of strawberries for corn or tobacco will lighten the horse work needs during the rush season of April, May and June.

Equipment. The same kinds of equipment or tools may be used in cultivating strawberries as have been used in cultivating corn and tobacco. The plows and harrows that are used in preparing land for corn and tobacco may be used in preparing land for strawberries. The same shovels and harrows that are used in cultivating tobacco may be used in cultivating strawberries. In buying new tools it would, of course, be desirable to consider the needs of the new crop, but it is not to be expected that any radical changes would be necessary.

It is necessary to provide a shed, or shade and platform, for grading and crating strawberries. Yet this harvesting season lasts only three or four weeks each year and often a tobacco barn or other shed may be used. Where no shed is available near the strawberry area, a temporary shed can be built very cheaply from old lumber or a more durable one built from new lumber and then used for other purposes.

Use of Land. The substitution suggests the use of the same area of land for cultivated crops. The experience of growers leads them to believe that strawberries leave the land in a higher state of fertility than it was in when they were planted. Corn and tobacco make rather heavy drafts on the soil and neither

can be grown on the same area year after year without decreasing the productivity of the soil. A small grain crop must be sown in the fall to keep the land from washing in the winter. This is usually expensive since small grain crops in western Kentucky seldom make large returns for the man labor and horse work used. On the other hand, strawberries provide a covering for the land through the winter. While it is not advisable to grow strawberries on the same area year after year, this is because the land becomes infested with insects and diseases especially injurious to strawberries rather than because of the impairment of fertility.

Managerial Activity. Obviously an added crop will mean added burdens to the operator in the way of thought and planning. There will be crates to purchase, contract labor for picking and grading to hire, and decisions to be made regarding cultivating and handling the crop. There will be added burdens to the operator during the harvesting seasons when many decisions must be made daily concerning picking and marketing the crop. Should any farmer feel that his full managerial possibilities are being utilized in growing the present crops, possibly he would not be able to increase his profits by growing strawberries. However, should he feel that he is capable of a slightly larger undertaking than his present crops and live stock make, he might do well to consider the possibilities of strawberries.

COMPARING THE RETURNS FROM "CORN AND TOBACCO" AND STRAWBERRIES

After the farmer has satisfied himself that he can reduce his corn and tobacco acreage and handle a small acreage of strawberries with the same land, labor force, teams and tools that he has been using, he then will want to consider the probable direct costs for and returns from corn and tobacco on the one hand and strawberries on the other. That is, he will want to know how much added expense the strawberries will call for and how much the yields and receipts for corn and tobacco will be reduced, and how much the strawberries will likely bring when sold.

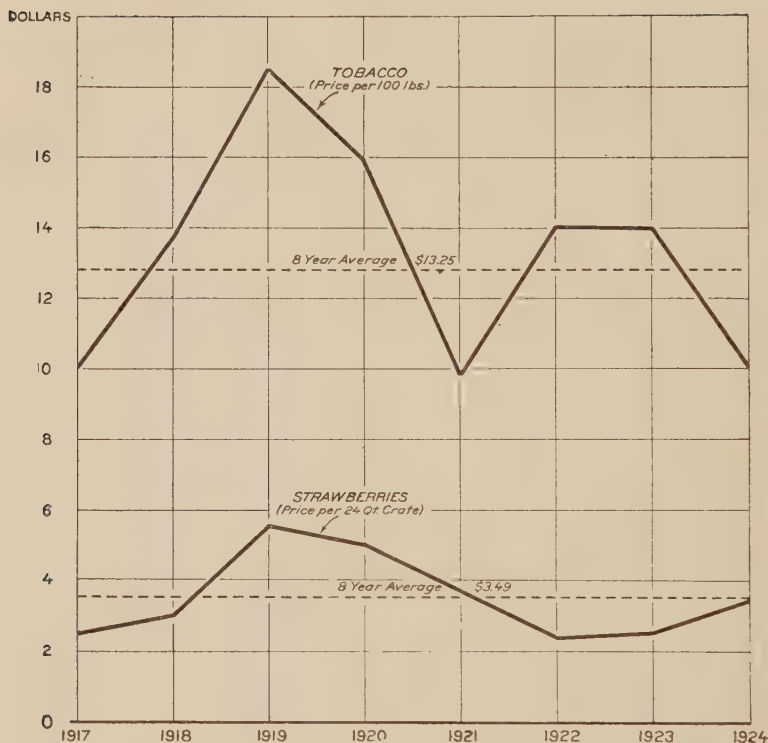


Fig. 11.—Prices of Strawberries and Tobacco from 1917 to 1924.

He will not be able to determine these things exactly. However, he can consider the yields and prices of the immediate past and the relation of the conditions under which these yields and prices were secured to present and anticipated conditions. Fig. 11 shows the average price received by strawberry growers selling thru one of western Kentucky's largest Strawberry Growers' Associations from 1917 to 1924 and the average price received by tobacco growers selling over the loose leaf floors of one of western Kentucky's largest tobacco markets from 1917 to 1924. Possibly the tobacco prices are from one to two dollars per hundred pounds higher than the average for the entire dark tobacco area. For most years possibly strawberry prices are from ten to twenty-five cents per crate lower than those

selling thru associations with express transportation facilities. The association supplying these data had only freight transportation facilities.

Tobacco prices vary widely from farm to farm for a given season. The season average received by some growers may be less than half that received by other growers selling on the same market at the same time. However, most farmers received about the same relative price from year to year. That is, a farmer who is in the upper price group one year, barring unusual circumstances, may expect to be up near the same group the next year unless he changes his practises or method of handling the crop.

Strawberry production is fairly well standardized in western Kentucky. Practically all growers handle the same variety and grade in the same way. The growers of one association receive approximately the same price for berries marketed during a season and the price spread for the different associations usually is small. Of course the price from season to season fluctuates with production. Fig. 3 suggests something of relation of production and prices.

Most of the tobacco in western Kentucky is produced at yields from 600 to 1,200 pounds per acre. The most common corn yields are from 20 to 45 bushels per acre. In the areas suited for strawberry production possibly the average corn yield is from 30 to 40 bushels per acre and the average tobacco yield about 900 pounds per acre.*

The data presented suggest that strawberry yields usually range from 50 to 125 crates per acre annually. Good cultivation practises should result in from 80 to 150 crates per acre.

With such facts as these before the farmer and a knowledge of his own abilities and limitations, he should be able to anticipate yields and prices for his own particular farm and in this way anticipate results from different combinations of crops.

Suppose we assume that a farmer has been getting 35 bushels of corn per acre with a value of 60 cents per bushel at harvest time, and 900 pounds of tobacco per acre which has been

*Should strawberries be left for only two harvesting seasons two acres of corn and two acres of tobacco would use about as much regular farm labor annually as four acres of strawberries.

selling for 14 cents per pound; that neighbors similarly situated have been getting 80 crates of strawberries per acre for which they have been receiving \$3.00 per crate; that he can see no reason for expecting different yields and prices and that his contemplating substituting strawberries for three acres of corn and one acre of tobacco. This should give him three acres of strawberries to harvest each year and he could make calculations similar to that shown in Table VII.

TABLE VII.—Probable Results of Substituting Strawberries for Three Acres of Corn and One Acre of Tobacco.**

(Good yield and prices for strawberries and tobacco.)		
Probable reductions in returns from corn and tobacco:		
3 acres corn @ 35bus per acre:		
Grain—105 bus. @ 60c.....	\$63.00	
Stover—36 shocks @ 25c	9.00	
1 acre tobacco—900 lbs. @ 14c	126.00	
Total		\$198.00
Seed corn—½ bu. @ \$2.00	\$1.00	
Tobacco fertilizer, canvas, spray material, etc.....	4.00	
Total (direct expenses reduced)		\$5.00
Probable reduction in income from corn and tobacco..		\$193.00
Probable added income—3 acres strawberries (Table VI).....		\$354.00
Probable increase in farm profits		161.00

Thus with these yields and prices the farmer in position to substitute strawberries for three acres of corn and one acre of tobacco should expect to increase his total farm profits by about \$161 each year. Under such conditions he would probably find it desirable to make some kind of a substitution.

Many farmers produce more than 900 pounds of tobacco per acre and usually sell considerably above the average price. Suppose we assume that the farmer who usually expects 1,200 pounds of tobacco per acre and 20 cents per pound is contemplating strawberries. Often farmers may live so far from the shipping point that they must hire some one to secure and haul pickers and to haul berries. We will assume, in this case, the farmer must pay \$3.00 per day for 20 days for hauling pickers to the farm and berries to the shipping point. His calculations would be something like that shown in Table VIII.

***The Yearbook of the United States Department of Agriculture give the average yields of tobacco in the Hopkinsville and Clarksville district as follows: 1917, 800 pounds; 1918, 800 pounds; 1919, 800 pounds; 1920, 764 pounds; 1921, 777 pounds; 1922, 780 pounds; 1923, 800 pounds. The same source gives the average corn yields in Kentucky as follows: 1917, 31.5 bus.; 1918, 26 bus.; 1919, 24 bus.; 1920, 30.5 bus.; 1921, 25.6 bus.; 1922, 28 bus.; 1923, 28.5 bus.

TABLE VIII.—Probable Results from Substituting Strawberries for Three Acres of Corn and One Acre of Tobacco.
(Yields and prices of tobacco above the average.)

Probable reduction in returns from corn and tobacco:	
3 acres corn @ 35 bus per acre:	
Grain—105 bus. @ 60c.	\$63.00
Stover—36 shocks @ 25c.....	9.00
1 acre tobacco—1,200 lbs. @ 20c	240.00
Total	\$312.00
Direct expenses reduced (Table VII)	5.00
Probable reduction in income from corn and tobacco	\$307.00
Probable returns from strawberries:	
Probable net returns—3 acres strawberries (Table VI)	\$354.00
Additional expense, hauling pickers and berries.....	60.00
Probable added income, strawberries	\$294.00
Probable decrease in farm profits	13.00

This calculation indicates that such a change would probably slightly decrease his total farm profits. Then with the probable yields and prices suggested here he would not desire to make any reduction in tobacco for strawberries and should he decide to plant strawberries he probably would add a small acreage without reducing his other crops or reduce some crop other than tobacco.

There are many farmers in western Kentucky who do not usually secure more than 700 pounds of tobacco per acre. There are many that do not usually sell the tobacco for more than 12 cents per pound. We will assume that a farmer who usually expects 700 pounds of 12-cent tobacco is contemplating strawberries. His calculations would be similar to that shown in Table IX.

TABLE IX.—Probable Results of Substituting Strawberries for Three Acres of Corn and One Acre of Tobacco.
(Yields and prices of tobacco below the average.)

Probable reduction in returns from corn and tobacco:	
3 acres corn @ 35 bus per acre:	
Grain—105 bus. @ 60c.	\$63.00
Stover—36 shocks @ 25c.....	9.00
1 acre tobacco—700 lbs. @ 12c	84.00
Total	\$156.00
Direct expense reduced (Table VII)	5.00
Probable reduction in income from corn and tobacco.....	\$151.00
Probable added income—3 acres strawberries (Table VI).....	354.00
Probable increase in farm profits.....	\$203.00

Thus we might go on and on with illustrations. These calculations have been made with the same strawberry yields and prices. The yields will vary from farm to farm and the prices from season to season. The calculations for one farmer would probably not fit all the conditions for any other farmer.

Some farmers with a small farm acreage not especially well suited for tobacco production, may find it desirable to displace tobacco entirely with strawberries as a cash crop. Possibly more will find it desirable to replace the other crops with strawberries only as the substitution seems to more evenly distribute the labor needs thruout the year. A better distribution of the labor needs should aid the farmer in his efforts to give all crops attention at the time the needs are most urgent.

Strawberries and tobacco in particular are crops that respond to careful and timely attention. Many farmers may find it desirable to reduce the tobacco acreage as much as the added strawberry acreage. Possibly more farmers overcrop than undercrop in both strawberry and tobacco production. A small acreage of tobacco and a small acreage of strawberries well cared for usually will net larger returns than larger acreages poorly cared for.

On the other hand, some farmers may find it advisable to add strawberries to the other crops without making any reduction when the labor force is already heavily employed, expecting to hire extra help largely to care for the strawberries. Some may find it advisable to use the work stock and equipment on the farm at present; others may find it advisable to buy another team and others may find it advisable to replace an old team with a younger and stronger one and thus provide added horse work in this way. And all may be making the best decisions possible.

In making plans for increases and substitutions it should be remembered that strawberries are highly perishable and that the market can be easily over-supplied. For this reason it is important to keep informed as to what the areas growing strawberries that go to market with Kentucky strawberries are doing. Often the farmer does well who plans new lines of production

or plans increases while his competitors are discouraged and are planning decreases. On the other hand, the farmer who plans increases solely on the basis of present prices is likely to reap blasted dreams.

These are things for the individual farmer to think about and decide. The suggestion is only a method of attack. The farmer knowing his own possibilities in the way of land, labor, teams and equipment will draw upon all sources available for information as to requirements, yields and prices and make his decisions. These decisions and the way in which they are executed will determine whether he is one of the most or one of the least successful farmers in his community.

